



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,290	07/27/2001	Kwok-Shun Cheng	MCA-437PC/US	8923
7590	08/25/2004			
Mykrolis Corporation 129 Concord Road Billerica, MA 01821-4600			EXAMINER MENON, KRISHNAN S	
			ART UNIT 1723	PAPER NUMBER
DATE MAILED: 08/25/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/890,290

Applicant(s)

CHENG ET AL.

Examiner

Krishnan S Menon

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Claims 1-32 are pending.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 8-18, 20-24, 26-30 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kawai et al (US 5,158,680).

Kawai (680) teaches a filtration cartridge with a housing having an inlet and outlet with one or more hollow fiber membranes located inside, having a liquid-seal and the membrane formed of perfluorinated thermoplastic resin (fig 2, col 9 lines 15-62) as in instant claim 1,3,5,6 and 8. The membrane could be pleated as in instant claim 2 and 10 (col 9 lines 45-55), or tubular depth filter as in instant claim 4 and 11 (col 9 lines 45-55). The membrane is potted in, and the caps could be of, a thermoplastic perfluorinated resin as in instant claim 12 and 9 (example 6, col 3 lines 44-52). The cartridge made substantially of thermoplastic perfluorinated resin as in instant claim 13 (example 6, col 9 lines 15-62, col 3 lines 44-53). The membrane could be microporous or ultrafiltration as in instant claim 14, 15, 26 and 27 (col 7 lines 8-55, col 10 lines 1-19, examples). There could be an end cap on each end of the housing (col 9 lines 53-58),

end cap being unitary with the membrane, being of same or similar material and melt joined, as in instant claim 16,17,28 and 29. The thermoplastic fluorinated polymer is PTFE-co-PFAVE as in instant claims 5, 18 and 30. The seal material for the cartridge has a lower melting point than the membrane material (col 8 lines 6-41) as in instant claim 20-22. The cartridge is cylindrical and could have a cylindrical (tubular) membrane in an annular form (one tubular membrane in one housing) (col 9 lines 44-58) and of substantially perfluorinated thermoplastic (col 3 lines 44-52). Kawai (680) teaches a hollow fiber cartridge with parts made substantially of perfluorinated thermoplastic (col 3 lines 44-52, fig 23, col 9 lines 15-62) with two ends having liquid-tight seals as in instant claim 32.

Kawai teaches phase separation for forming the membrane as in all claims (col 5 lines 24-68). However, "thermally induced phase separation" and "liquid-liquid phase separation" as in the instant claims are process steps in product claims. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7,19,25,31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawai (680) in view of EP 0 175 432 A2.

Kawai (680) teaches all the elements of claims 7,19,25 and 31, except the choices for the alkyl group in instant claim 7, 19 and 31, and the fabric reinforcement for the flat sheet membrane as in instant claim 25. Kawai (680) teaches a porous support for the membrane (col 7 lines 57-68) but does not say that it is a fabric. EP'432 teaches a perfluorinated polymer thermoplastic support for the perfluorinated thermoplastic membrane to make a pleated membrane cartridge.(16-fig 1 and 2). It would be obvious to one of ordinary skill in the art at the time of invention to use the teachings of EP'432 and provide a fabric support for the membrane of Kawai (680) by lamination for improved strength and for providing an additional filter layer for coarse filtration. One of ordinary skill in the art at the time of invention obviously would chose a lower order alkyl group such as methyl, ethyl or propyl, or a mixture thereof, if one need to chose an alkyl group.

### ***Response to Arguments***

Applicant's arguments filed 7/6/04 have been fully considered but they are not persuasive.

The applicants argue that the claimed membrane is formed by thermally induced and liquid-liquid phase separation, whereas the membrane in the Kawai ref does not utilize a solution process, but a dispersion of PTFE resin material. In response, first of all, the formation steps such as thermally induced and liquid-liquid phase separations do not make the claims patentable by In re Thorpe doctrine, unless the applicants can show with evidence that their membrane possess a structure that is distinct and unobvious compared to the structure of the prior art membrane. Secondly, the process in the Kawai ref comprises phase separation from a melt-solution, similar to what is described in the applicant's process (amended pages of the specification submitted by the applicant with the amendment), which is described by the following excerpts from the reference:

"The PTFE resin used in the invention is a tetrafluoroethylene homopolymer or a copolymer which contains not less than 50 mol%, preferably not less than 60 mol% and more preferably not less than 80 mol% of tetrafluoroethylene in terms of monomer unit, e.g., ***a tetrafluoroethylene-perfluoroalkylvinylether copolymer, a tetrafluoroethylene-hexafluoropropylene copolymer***, a tetrafluoroethylene-ethylene copolymer and so forth, or their mixture (emphasis added)." (see col 3 lines 44-52)

"The type of the non-coagulative fluid ... depends on the type of the film-forming polymer. Generally, however, the non-coagulative fluid is suitably selected from substances such as water, glycerol, ethylene glycol, polyethylene glycol, liquid paraffin, isopropylmyristate, freon and their mixtures, ... ." (see col 5 lines 24-40)

"The [film] also may be formed by extruding a film formable mixture through a slit into a coagulating liquid directly or indirectly through the air." (see col 5 lines 40-48)

Form these passages, it is clear that if one uses either tetrafluoroethylene-perfluoroalkylvinylether copolymer or tetrafluoroethylene-hexafluoropropylene copolymer, with a freon (which is a **chlorofluoroethylene oligomer** as in applicants' disclosure – submitted amended page) as the solvent, the resulting mixture will be a solution, and the process would then be exactly like what is disclosed in the application.

### ***Conclusion***

This is an RCE of applicant's earlier Application No. 09/890,290. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Krishnan Menon  
Patent Examiner

  
W.L. WALKER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700